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United States Department of Agriculture

Soil Conservation Service
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Flood plain management

Why we need it



Flood plain management: Why we need it

Flood plains are the relatively flat areas adjoining rivers and coastal waters.

When rain causes a river to swell and overflow its banks, the floodwater spills onto the flood plain and its velocity decreases. As the water spreads over the plain, it deposits sediments that the river carried down from upland areas. Upland sediments often are high in nutrients. As the cycle of flooding is repeated over the years, the deposits slowly form fertile soils that can support a rich diversity of plant and animal life.

Early American settlers were attracted to flood plains because of the fertile soils and the nearby waterways that provided transportation, power, food, and plentiful water for everyday use. Over the years, small trading posts and farm settlements grew, and many have become large cities.

Today, 24 million Americans live on flood plains in 20,000 flood-prone communities across the Nation. More than 100 million acres of flood plains are farmed. To reduce the dangers of flooding, we must honor a flood plain's natural function: to receive floodwater and disperse its energy.

Unwise change in land use is a risky proposition

Take a look at the flood plains in your area. Have homes, schools, shopping centers, hospitals, factories, and other structures been built there? Are new highways, streets, and utilities encouraging further flood plain development? Are there flow-restricting culverts and bridges? When too many structures are built on a flood plain, they obstruct the floodwater and raise flood levels.

Are high-value crops and vegetables being grown close to the stream? During a flood, economic losses to these crops would be greater than losses to lower value crops such as pasture. Are farmhouses and other farm buildings located on the flood plain? If so, have they been floodproofed to reduce the possibility of flood damage?

In upland areas of your community, is the natural vegetation being cleared for new cropland or urban development? Clearing reduces the capacity of the soil to catch and hold stormwater.

The combination of too much upland clearing and too much construction on the flood plain means that more stormwater reaches the flood plain at a time when its

capacity for receiving stormwater has been reduced. Under these conditions a major storm can have catastrophic effects.

The high cost of flooding

The cost in property damage is high—\$3 billion each year—and one-half of this cost is in losses to agriculture. The cost in human life is higher—4,000 deaths since 1925.

In the 1970's the federal government spent more than \$3 billion for flood disaster relief, not including low-interest emergency loans. In the past 40 years more than \$10 billion was spent on federal flood control projects. But the known risk of flood plains has not slowed development, and the cost of flood damage continues to grow.

Flood plain management: Cooperative search for a lasting solution

The root of the problem in flood plains is unplanned or unwise development. The solution lies in flood plain management: the combined efforts of government agencies, communities, developers, land use planners, and landowners to treat the flood plain as an integral part of the entire river or shore system.

The goal of flood plain management is to make wise choices among compatible land uses for both economic potential and the protection of natural resources. Land uses such as agriculture, recreation, and wildlife habitat are generally compatible with flood plain protection. A limited amount of urban development can also be compatible if properly planned.

If the flood plain's capacity to receive flood flows can be preserved, property damage and human suffering can be greatly reduced. Flooding is inevitable, but severe flood damage is not inevitable. It can be prevented if land use and flood risk are in harmony.

Help available from the Soil Conservation Service

Through cooperation with other federal, state, and local agencies, the Soil Conservation Service (SCS) provides assistance to land users in flood plains. Working with local governments and conservation districts, SCS specialists can help communities plan flood plain management by:

- Identifying flood hazard areas. SCS determines the probable depth, width, and velocity of floodwaters and

estimates how often a specific area is likely to flood. SCS also prepares maps of the flood plain to guide local planners.

- Inventorying the natural values in the flood plain, such as prime farmlands, wildlife habitat, wetlands, and environmental corridors. The Soil Conservation Service identifies ways to preserve these interrelated natural values.
- Helping communities prepare alternative plans for flood plain management and describing the probable effects on the ecosystem, the local economy, property, and public safety.
- Interpreting the results of technical studies.

Communities need detailed information about the flood plain to prepare and evaluate alternative plans. For example, what is the productive capacity of the land for agriculture? And are there flood-free areas where urban development would be more appropriate than on the flood plain? SCS can help answer these questions, but the community must decide what actions to take.

For assistance with flood plain management in your area, contact the local SCS office or soil and water conservation district. The Soil Conservation Service is listed in local telephone directories under "United States Government, Department of Agriculture." Assistance is available to all regardless of race, religion, sex, or national origin.

Floodproofing

Before changing land use on a flood plain, carefully weigh the potential flood risk. The best way to reduce flood risk is to select flood-free areas for agricultural and urban uses, but this is not always practical.

Making floodproofing an integral part of plans is the most desirable approach. To ensure that floodproofing of new or existing structures will be effective, consult professionals to prevent any oversight that could cause problems later. For example, if a dike is to be built around a structure, plan a way of removing rainwater that falls inside the dike's perimeter.

There are many simple and practical floodproofing methods. A few of the major ones are shown.

1. *This house is built on columns of concrete block (one is visible at center of photo). The columns raise the living quarters well above expected flood levels. The lower level is used for parking and storage.*
2. *Children on their way to school cross a high wide levee that prevents flooding of the school grounds and buildings.*
3. *Adding fill material before construction economically raised this homesite above expected flood levels.*
4. *Wooden pilings are used to elevate the living quarters of this new house.*



SCS flood hazard maps show where a flood is likely to occur in the community. The shaded area is the flood plain. Note the many buildings in this high-risk area. Using maps and other information in SCS flood plain management studies, planners and landowners can select compatible land uses and safe areas for development. They can also plan ways to reduce the risks to people and to property, the environment, and the community's economic base.



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SCS flood hazard maps show where a flood is likely to occur in the community. The shaded area is the flood plain. Note the many buildings in this high-risk area. Using maps and other information in SCS flood plain management studies, planners and landowners can select compatible land uses and safe areas for development. They can also plan ways to reduce the risks to people and to property, the environment, and the community's economic base.



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